Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_

**Scientific Method Scenarios Assignment**

Mrs. Krouse, Pre-AP Biology, 2015-2016

***Directions:*** *For each of the experiments described below, record the independent variable, dependent variable, control group, experimental group, and any constants given in the chart on the student answer sheet. There may be multiple experimental groups described for a particular experiment!*

**Experiment #1 Patty Power:**

Mr. Krabbs wants to make Bikini Bottoms a nicer place to live. He has created a new sauce that he thinks will reduce the production of body gas associated with eating crabby patties from the Krusty Krab. He recruits 100 customers with a history of gas problems. He has 50 of them (Group A) eat crabby patties with the new sauce. The other 50 (Group B) eat crabby patties with sauce that looks just like new sauce but is really just mixture of mayonnaise and food coloring. Both groups were told that they were getting the sauce that would reduce gas production. Two hours after eating the crabby patties, 30 customers in group A reported having fewer gas problems and 8 customers in group B reported having fewer gas problems.

**Experiment #2 Fuzzy Teeth:**

A dentist wants to test different toothpaste brands to see which one works best to recommend to his patients. He takes 4 groups of 25 people and gives group #1 brand A, group #2 brand B, group #3 brand C and group#4 brushes with water only. Each person brushes with the same toothbrush and water. After 3 days, the dentist records the levels of tartar build-up in each person’s mouth.

**Experiment #3 Microwave Miracle:**

Patrick believes that fish that eat food exposed to microwaves will become smarter and would be able to swim through a maze faster. He decides to perform an experiment by placing fish food in a microwave for 20 seconds. He has the fish swim through a maze and records the time it takes for each one to make it to the end. He feeds the special food to 10 fish and gives regular food to 10 others. He uses the same type of fish for each group, and the same maze. After 1 week, he has the fish swim through the maze again and records the times for each.

**Experiment #4 Mold Madness:**

A class is learning about mold, and wants to know if unusually high or low temperatures influence mold growth. They take three batches of the same type of bread and size of slices and places the three batches in different temperatures. Batch A is held at 35 degrees Celsius, Batch B at room temperature and Batch C at 10 degrees Celsius. The percent of each bread slice covered by mold for each group is recorded every day for 10 days.

**Experiment #5 Clean the Kitchen:**

Andrew wants to test a new kitchen counter cleaner. He splits his counter into two parts using tape. The first section he cleans with water only and the second section he cleans using the new cleaner. The two sections are the same type of counter and in the same area of the kitchen. He records the number of bacteria after one week of cleanings.

**Experiment #6 Student Study:**

A teacher wants to study the effect of number of hours of studying on test results. She has five classes. The first class she has study zero hours, the second studies one hour, the third studies two hours, the fourth studies three hours, the fifth studies four hours. She records the average test score for each class. The students are given the same study materials, amount of sleep, and the same amount and type of food and water.

**Experiment #7 Marshmallow Muscles:**

Larry was told that a certain muscle cream was the newest best thing on the market and claims to double a person’s muscle power when used as part of a muscle-building workout. Interested in this product, he buys the special muscle cream and recruits Patrick and Sponge Bob to help him with an experiment. Larry develops a special marshmallow weight-lifting program for Patrick and Sponge Bob. He meets with them once every day for a period of 2 weeks and records the number of marshmallows they can lift at a time. Before each session, Patrick’s arms and back are lathered in the muscle cream, while Sponge Bob’s arms and back are lathered with the regular lotion.

**Experiment #8 Rat Race:**

Dr. Imanut wants to examine whether a new drug increases the maze navigating performance of rats. Dr. Imanut teaches two groups of rats to find a piece of tasty rat chow in the maze.  One group of rats is given the new drug while they are learning the maze.  The second group is not given the drug.  One week after having learned the maze he retests the rats and records how long it takes them to find the rat chow. The rats in both groups are the same age and species of rat.

**Experiment #9 Fertilizing Plants:**

A consumer advocate group wants to test whether a fertilizer company’s claim that plants grow taller with their fertilizer is accurate. They perform the following experiment: Forty coleus plants are grown from clippings of a single plant. All of the plants are approximately the same height at the start of the experiment. Twenty of the plants receive the recommended amount of fertilizer with each watering. The remaining twenty plants receive the same amount of water with no fertilizer. All forty plants are grown at 25 ˚C with 10 hours of light daily. The height of each plant is recorded every 5 days for 2 months.